

Applicant(s): RICHARD E. FORKEY AND RICHARD G. CYR AND ROBERT N. ROSS  
Serial No.: 10/659,727  
Filed: September 10, 2003

REMARKS

This application was examined with claims 1 through 25. Claims 21 through 25 are indicated to be allowable. Claims 1, 4, 10, 13, 19 and 21 are amended; claims 3 and 12 are cancelled; and claims 26 and 27 are added. Claims 1, 2, 4 through 11 and 13 through 27 remain in the application.

Applicant requests reconsideration and reexamination of the above-identified application in view of the amendments made to the claims. The following remarks state Applicant's bases for making this request and are organized according to the Examiner's Action by paragraph number.

Examiner's Action, Paragraph 1

Applicant acknowledges the Examiner's statement concerning the status of the cited reference DE 9200876U.

Examiner's Action, Paragraphs 2 through 4

The Examiner rejects claims 1 through 3, 6 through 12 and 15 through 21 as anticipated by or as being obvious in view of DE 4438511 to Hasegawa (hereinafter the "Hasegawa reference") arguing that the Hasegawa reference discloses:

1. a final lens element 21, as shown in FIGS 11A and 11B, multiple planar faces extending between image forming surfaces, and
2. a sheath surrounding the lens element.

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The Examiner recognizes that the Hasegawa reference "discloses the claimed invention except for the planar faces being formed by a sawn process" and then argues that claim 1 should be interpreted as incorporating a process step so that the manner in which the device is made is not patentable. In re Thorpe, 227 USPQ 964 (Fed. Cir. 1985) and In re Marosi, 218 USPQ 289, 292 (Fed. Cir. 1983).

Applicants respectfully traverse this rejection.

FIGS. 11A and 11B of Hasegawa disclose an endoscope that resists damage due to bending. The Hasegawa endoscope includes a relay lens system with bar lenses, also called rod lenses 21, for conveying an image from an objective 8 to an eyepiece 1 for viewing. Each bar or rod lens in the relay lens system has spherical polished ends. Each additionally has three planar surfaces at 120° angles interconnected by arcuate, circumferentially extending segments that contact an outer sheath 22.

The specifically disclosed bar lenses in the Hasegawa reference have a 3 mm diameter. It was common practice to make lenses of this size using conventional grinding and polishing processing, particularly in 1993 when the Hasegawa reference was filed. The Hasegawa reference contains no contrary indication of the nature of the surface; specifically there is no disclosure of "sawn" surfaces. Moreover, the Hasegawa reference does not disclose a polygon cross-section. Applicants

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disclose and mean by "polygon", "a closed figure consisting of straight lines joined end to end." *Webster's Third New International Dictionary, Unabridged.* Merriam-Webster, 2002.  
<http://unabridged.merriam-webster.com> ( 31 Jan. 2006).

Applicants respectfully submit that the Hasegawa reference should be construed as only disclosing ground planar faces, but not a polygon.

Applicants have also amended claim 1 to reorganize the claim language to provide a better definition of the invention, particularly emphasizing the original distinction of a lens with a "sawn, planar face". Applicants respectfully submit that "sawn" in claim 1 defines a physical characteristic and should be construed as a structural limitation, not as a process.

With respect to the precedent the Examiner cites, claim 1 of this application has a different structure from the claim considered by *In re Thorpe* and is distinguishable. *In re Thorpe* provides a claim entirely related to the process. It was:

"44. The product of the process of claim 1."

Certain of Applicants' claims recite structure; other claims define a method for constructing extremely small lenses. Each of the recited structures and the recited method defines structural and method characteristics, respectively, particularly lenses less than 1 to 2 mm in diameter. The

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application defines the various factors which prohibit the use of conventional polishing and grinding processes for producing such small lenses. The specification describes the successful manufacture of a final lens element that could be circumscribed by a sheath having a diameter of 0.6 mm. This structure is achieved by recognizing that the surfaces of the lens extending between the image forming surfaces can have a sawn texture rather than being ground. Applicants' method claims further disclose a particular approach for forming a sawn, planar surface, as by dicing.

Applicants respectfully submit that they have sustained their burden of establishing an unobvious difference between the claimed product and the prior art product because nothing in the prior art discloses or suggests the concept of a final lens element having a sawn, planar surface extending between the polished image forming transverse surfaces.

Applicants respectfully submit that claims 2, 3, 6, 7, 8, 9, 11, 12, 15, 16, 17 and 18 define Applicants final lens elements in terms of varying scope to which Applicants are entitled. Applicants respectfully submit that each claim is patentable for the same reasons base independent claims 1 and 10 are patentable.

Applicants further submit that claim 19, the independent method claim, should also be patentable. Nothing in the Hasegawa reference discloses or suggests the steps of

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constructing an initial lens element with at least one lens element, or removing portions by sawing. The Hasegawa reference discloses single lens elements not formed into a lens system. To a person of the ordinary skill in the art given the disclosure in the Hasegawa reference, the individual lens elements would have the planar surfaces formed on them independently, not from all the lens elements in the lens system.

For each of the foregoing reasons, Applicants respectfully submit that each of claims 1 through 3, 6 through 12 and 15 through 21 define a structure that is novel over the Hasegawa reference and further that the differences would not have been obvious to a person of ordinary skill in the art at the time Applicants made their invention.

Examiner's Action, Paragraph 5

The Examiner further rejects claims 4, 5, 13 and 14 under 35 U.S.C. 103(1) as being unpatentable over the Hasegawa reference in view of U. S. Patent No. 6,088,157 to Mazurkewitz. Specifically the Examiner cites the Mazurkewitz reference for its disclosure at column 5 stating that an elongated lens element can have predetermined cross section geometry. The Examiner argues that changing the optical device of the Hasegawa reference with its triangular cross section to one of a square cross section is disclosed in the Mazurkewitz

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reference.

Applicants respectfully traverse this rejection.

Claims 4 and 5 depend indirectly from claim 1 and therefore incorporate all the limitations of claim 1. Likewise claims 13 and 14 depend indirectly from claim 10. There is nothing in the Mazurkewitz reference that overcomes the basic deficiency of the Hasegawa reference. Specifically nothing discloses the concept of a lens element having a sawn, planar surface extending between the image forming surfaces of a final lens element.

Examiner's Action, Paragraphs 6 and 7

The Examiner's response to arguments and comments are noted.

Examiner's Action, Paragraphs 8 and 9

Applicants appreciate the Examiner's indication that claims 21 through 25 would be allowable if rewritten in independent form and the statement for reasons for allowability. However, Applicants have not rewritten claims 21 through 25 in independent form because Applicants believe that upon reconsideration the Examiner will allow independent claims 1, 10 and 19 and all the remaining depending claims.

Examiner's Action, Paragraph 10

The Examiner makes certain prior art of record. Applicants respectfully submit that nothing in these references taken singly or in combination with each other or with any of the

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other references cited during the prosecution of this application disclose or suggest Applicants' invention, particularly EP 1 211 525 of Koshi et al and US 5,680,260 of Farcella et al. The Koshi et al. reference discloses a refractive index distribution lens that, as shown in FIGS. 10 through 16, may have a polygon cross-section. As stated in Paragraph [0012] the peripheral portion of a lens is removed by mechanical or chemical processing. Paragraph [0016] subparagraph (3) describes mechanical processing as including grinding.

This reference does not disclose a lens element that is characterized by polished image forming surfaces transverse the geometric axis at each end. Moreover, this reference does not disclose any sawing or any sawn surfaces. The planar surfaces, if mechanically produced, are ground surfaces.

The Farcella et al. reference discloses an assembly with first and second optical elements. Each of the elements includes a molded extension that allows pins to position the two lens elements precisely. These lens elements are thin and produce a lens assembly that is oversized. The invention in the Farcella et al reference is primarily directed to providing a structure whereby two optical elements are oriented, spaced accurately with respect to each other. As shown in FIGS. 4 and 5, elements are molded into a combination and then these elements are cut or sawn along cords of the round lens element

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thereby to produce a structure having an appropriate construction with two parallel edges. The resulting structure is not a polygon.

#### Summary

Applicants have amended claims 1, 10 and 19 to distinguish the claimed invention from the prior art. Applicants respectfully submit that particularly claims 1 and 10 are not product by process claims, but are product claims with specific structural limitations. Moreover, Applicants respectfully submit that each claim defines a structure or method that is novel and that the differences over the prior art would not have been obvious to a person of ordinary skill in the art at the time Applicants made their invention. Therefore, Applicants respectfully request the Examiner to reconsider his position and allow claims 1 through 25.

Respectfully Submitted,



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